We claim:

1. A crystalline form R of atorvastatin hemi calcium and hydrates thereof.

2. Crystalline atorvastatin hemi calcium form R or a hydrate thereof having a powder XRD pattern substantially as depicted in FIG. 1.

3. Crystalline atorvastatin hemi calcium form R or a hydrate thereof having IR spectrum substantially as depicted in FIG. 2.

4. The crystalline form R of atorvastatin hemi calcium of claim 1 exhibiting an XRD spectrum comprising characteristic peaks at about 8.62, 10.16 and 19.32 degrees two-theta.

5. The crystalline form R of atorvastatin hemi calcium of claim 1 further comprising peaks at about at 3.6, 8.24, 18.12, 18.36, 20.44, 20.82, 21.22 and 23.82 degrees two-theta.

6. A process for preparing crystalline form R of atorvastatin hemi calcium and hydrates thereof comprising dissolving crude atorvastatin hemi calcium in a solvent system comprising tetrahydrofuran and methanol and recovering Form R atorvastatin hemi calcium or hydrates thereof.

7. The process according to claim 6 wherein crude atorvastatin is any of the polymorphic form reported earlier.

8. The process according to claim **6** wherein crude atorvastatin hemi calcium contains unreacted compounds, side products or other impurities.

9. The process according to claim 6 wherein mixture of crude atorvastatin hemi calcium and solvent system is heated up to reflux.

10. The process according to claim 6 wherein Crystalline form R of atorvastatin hemi calcium and hydrates thereof is precipitated by addition of an anti solvent.

11. The process according to claim 10 wherein an anti solvent is water.

12. The process according to claim 6 wherein Crystalline form R of atorvastatin hemi calcium and hydrates thereof is isolated by cooling the reaction mixture to a temperature of about 20 to 40°C.

13. The process according to claim 6 and 11 wherein tetrahydrofuran, methanol and water are in the volume ratio 1:1:4.

14. A process for the preparation of stabilized amorphous form of atorvastatin hemi calcium comprising dissolving crystalline Form R of atorvastatin hemi calcium and hydrates thereof in a solvent, and adding the anti-solvent to the resulting solution.

15. The process according to claim 14 wherein solvent is selected from the group consisting of ketones, esters, chlorinated hydrocarbons, cyclic ethers, alcohols, nitriles, dipolar aprotic solvents and mixtures thereof.

16. The process according to claim 14 wherein anti solvent is selected from the group consisting of hydrocarbons and dialkyl ethers.

17. The process according to claim 14, wherein an antioxidant is added to the atorvastatin hemi calcium solution to obtain stabilized amorphous atorvastatin hemi calcium.

18. The process according to claim 17, wherein an antioxidant is selected from the group consisting of butylated hydroxyanisole, butylated hydroxytoluene and tertiary-butylated hydroquinone.

19. A pharmaceutical composition comprising crystalline form R of atorvastatin hemi calcium or hydrates thereof along with pharmaceutically acceptable excipients, diluents and carriers.

20. A method for treatment or prevention of hyperlipidemia, hypercholesterolemia, Alzheimer's disease atherosclerosis, xanthoma and in synergism with other drugs for treatment of phytosterolemia lipase deficiency and the like, which comprises administering to a patient in need thereof, a therapeutically effective amount of Crystalline Form R of atorvastatin hemi calcium or hydrates thereof.

21. The use of crystalline form R of atorvastatin hemi calcium and hydrates thereof in the manufacture of a medicament for the treatment or prevention of hyperlipidemia, hypercholesterolemia, Alzheimer's disease, atherosclerosis, xanthoma and in synergism with other drugs for treatment of phytosterolemia lipase deficiency and the like.

22. A process for preparing crystalline form R of atorvastatin hemi calcium and hydrates thereof comprising dissolving crude atorvastatin hemi calcium in a mixture of tetrahydrofuran and methanol, and precipitating with water to obtain crystalline form R of atorvastatin hemi calcium.

23. The process for the preparation of Crystalline Form R of atorvastatin hemi calcium or hydrates thereof as herein described and illustrated by the examples herein.